

It will also be appreciated that one significant advantage of the above-described semiconductor composition layer is that it makes the switch incorporating it virtually bounceless. Thus, the semiconductor composition provides a contact resistance that prevents the signal spikes which occur when the switch contacts initially touch.

Referring now to FIG. 3, another embodiment of the invention is shown comprising a first base member 70 which may be a flexible Mylar material, a rigid plastic material or any other suitable nonconducting support member, and a second base or support member 72 in transversely spaced relationship with the first base member 70. A first conductor 74 is disposed on the surface of the first base member 70. The conductor 74 includes a first contact member 76 with a plurality of interdigitating fingers 78 and a second contact member 80 also with a plurality of interdigitating fingers 82. The first contact member 76 is electrically interconnected to a first terminal 84 and the second contact member 80 is electrically interconnected to a second terminal 86. A first utilization circuit 88 may then be electrically coupled between the first terminal 84 and the second terminal 86 in the manner previously described in connection with the embodiment of FIG. 1.

A second conductor 90 is likewise disposed on the surface of the first base member 70. The second conductor 90 has a pattern which in one embodiment is a U-shaped pattern disposed around the first conductor 74. As in the previous embodiment, the first conductor 74 and the second conductor 90 are laterally displaced on the first base member in sufficiently close proximity so that a single transverse touch force will simultaneously actuate the switches respectively including the first conductor 74 and the second conductor 90.

The embodiment of the invention as illustrated in FIG. 3 also comprises a third conductor 92 disposed on one surface of the second base member 72 in facing, aligned relationship with the first conductor 74, and a fourth conductor 94 disposed on the same surface of the second base member 72 in facing, aligned relationship with the second conductor 90. Hence, the first conductor 74 and third conductor 92 comprise the contacts of a first switch and the second conductor 90 and the fourth conductor 94 comprise the contacts of a second switch of the present invention.

In the preferred embodiment the third conductor 92 is simply an electrically isolated conductive portion on the second base member 72 having a size sufficient to overlay or cover the entire first conductor 74. The fourth conductor 94 has a size and shape corresponding to the second conductor 90. The first, second, third and fourth conductors 74, 90, 92 and 94 may be of any appropriate material and may, for example, be a thin layer of sprayed-on silver, a thin layer of copper, or other suitable conductive material.

In order to provide a variable contact resistance, a semiconducting composition 96, somewhat similar to that previously described, may be disposed to cover the first conductor 74. Alternatively, the semiconducting composition 96 may be disposed to cover the third conductor 92 or, if both switches are desired to have a variable contact resistance, the semiconducting composition may be disposed on one or both of the second and fourth conductors 90 and 94.

In yet another alternative embodiment, the semiconductor composition layer 96 may be omitted and the third conductor 92 provided to be made solely of the

semiconductor composition. In such an embodiment, a separate conductive layer such as the silver or copper layer previously described, need not be provided for the third conductor 92. Of course, it will be appreciated that this latter embodiment is possible because the distance between each of the interdigitating fingers 78 and 82 is sufficiently close that the lateral resistance through the semiconducting composition layer comprising the third conductor 92 is relatively low when maximum transverse pressure is applied.

Finally, a second utilization circuit 98 may be interconnected between the second conductor 90 and the fourth conductor 94.

One advantage of this latter embodiment is that a plurality of similar dual switch apparatus may be arranged in a keyboard arrangement with each fourth contact of each separate dual switch arrangement being interconnected in a common buss configuration thereby minimizing the number of electrical contacts which must be made to interconnect the plurality of dual switches in the keyboard arrangement.

Thus, while the present invention has been particularly shown and described with reference to preferred embodiments, it will be understood by those skilled in the art that the foregoing and other changes in form and details may be made without departing from the spirit and scope of the invention.

What is claimed is:

1. A dual switch apparatus defining two independent switches simultaneously actuated in response to a single transverse force comprising:
 - a first support member;
 - a first conductor disposed on the first support member;
 - a second connector disposed on the first support member;
 - a second support member;
 - a third conductor disposed on the second support member;
 - a fourth conductor disposed on the second support member;
 the first and second support members juxtaposed opposite one another in normally spaced apart relationship with the first and third conductors and the second and fourth conductors laterally spaced in simultaneous actuating proximity, the first and third conductors transversely movable into electrical conducting relationship and the second and fourth conductors transversely movable into electrical conducting relationship in response to application of the single transverse force, the first and third conductors defining a first switch and the second and fourth conductors defining a second switch; and
2. The dual switch apparatus of claim 1 wherein the first conductor comprises:
 - a first contact member; and
 - a second contact member, the first and second contact members being electrically isolated with the third conductor providing a shunt for electrically coupling the first and second contact members in response to the application of the single transverse force.